Roll No.										

IET, Dr. ShakuntalaMisra National Rehabilitation University, Lucknow

Department of Applied Science and Humanities

Sessional Test – 1

Sem & Year: I & I **Session: 2023-24**

Subject: Basic Electrical Engineering **Code: TES 102**

Duration: 90 Minutes **Max. Marks: 20**

Section – A (खण्ड–अ)

Objective Questions(वस्तुनिष्ठ प्रश्न)

1. Answer allthe following questions. **5×1=05**

(i) A passive element in a circuit is one which.....

a. receives energy
b. supplies energy
c. both supplies and receives energy
d. none of the above

(ii) A linear circuit is one whose parameters (e.g. resistances etc.) .....

a. do not change with voltage and current
b. change with change in current
c. change with change in voltage
d. none of the above

(iii) KCL is based on the fact that

a. There cannot be an accumulation of charge at a node.
b. There is a possibility for a node to store energy.
c. Charge accumulation is possible at node
d. Charge accumulation may or may not be possible.

(iv) All _____ are loops but _____ are not meshes

a. Meshes, loops
b. Loops, Meshes
c. Branches, loops
d. Nodes, Branches

(v) Resistance of a wire is yΩ. The wire is stretched to triple its length, then the resistance becomes _

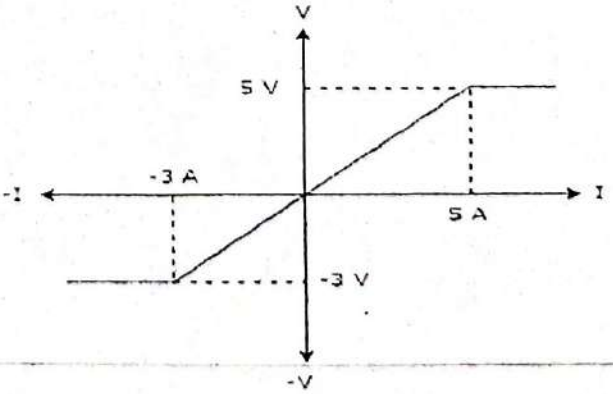
a. 3y
b. 6y
c. y/3
d. y/6

Section – B (खण्ड–ब)

Short Answer Questions (लघुउत्तरीय प्रश्न)

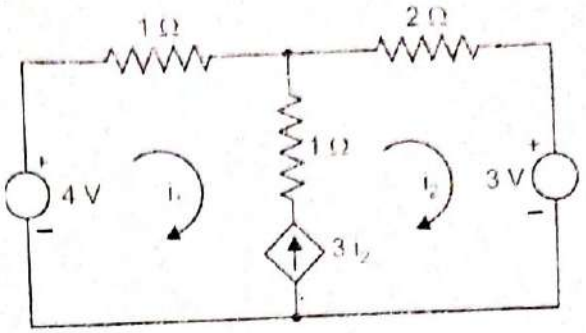
2. Answer any five of the following questions in maximum 50 words. **5×2=10**

(i) The V-I characteristics of a network element is shown here. Verifying the network element on the basis of Active Elements and Passive Elements; Linear Elements and Non-linear Elements; Bilateral Elements and Unilateral Elements; Lumped Elements and Distributed Elements.



(ii) Explain and discuss in detail the Star–to-Delta and Delta-to-Star Transformations equations for Resistive Networks.

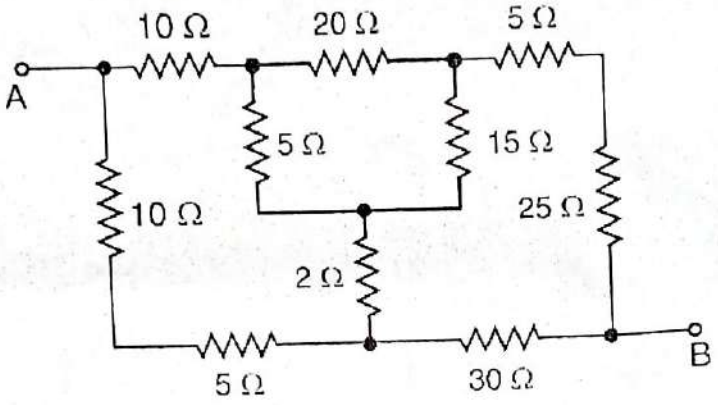
(iii) Find mesh currents i_1 and i_2 in the electric circuit shown in Fig.



(iv) Write down the statement and procedure of Norton theorem.

(v) Write down the statement and procedure of Superposition theorem.

(vi) Determine the resistance between the terminals A and B of the network shown in Fig.

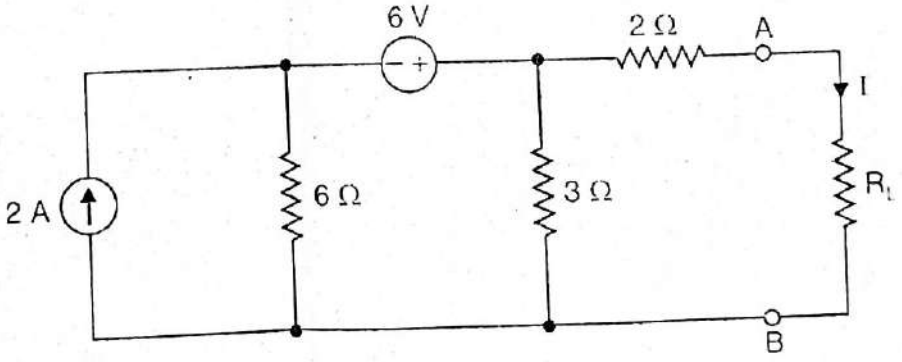


Section – C (खण्ड–स)

Descriptive Questions(विवरणात्मकप्रश्न)

3. Answer any 01 question of the following question in maximum 150 words. **1×5=05**

(i) Find Thevenin's equivalent circuit to the left of terminals AB in Fig.



(ii) Using Norton's theorem, find current through 1Ω resistor in Fig. All resistances are in ohms,